Montana Bureau of Mines and Geology Ground Water Investigation Program

**Project Selection Documentation** 

For

**Water Policy Interim Committee** 

July 26, 2010

#### **List of Documents**

Active (2009-2011) and Proposed Projects (2010)

**Ground Water Assessment Steering Committee - members** 

MCA 85-2-525: Ground Water Investigation Program - advisory committee

Steering Committee Minutes May 4, 2010

Steering Committee Agenda for June 16, 2010

Steering Committee letter of project solicitation (with criteria and form), July 1, 2010

Steering Committee Minutes October 2, 2009

Steering Committee – criteria and final list for 2009-2011 biennium, July, 2009

Steering Committee minutes June 17, 2009

Steering Committee minutes November24, 2008

### Montana Bureau of Mines and Geology Ground Water Investigation Program

#### **ACTIVE 2009-2011**

North Hills
Four Corners
Belgrade
Lower BH River West
Scratch Gravel Hills
Florence
Flathead Valley

#### PROPOSED 2010 (not inclusive, not ranked)

West Billings Hamilton

Madison Valley Ennis

Manhattan

Madison Valley Quake Lake

Tongue River CBM

Three Forks

Greenfield Bench

West Yellowstone

Big Sky

Boulder River East Billings

NF Flathead

Summit Valley
Priest Butte Lake

Townsend, Toston

Jefferson River

Bitterroot East Channel

Sidney

Missoula Valley

Stillwater Valley

Georgetown Lake

Flaxville Gravels

Eureka

Smith Valley

Paradise Valley Pine Creek

Park City

Noxon

Rock Creek

Roundup

Belt, Monarch

Clear Lake

**Pryor Mountains** 

Little Belt Mountains

Ft Peck Porcupine East

## GROUND-WATER ASSESSMENT STEERING COMMITTEE MEMBERSHIP LIST (October 2, 2009)

#### **VOTING MEMBERS**

Ms. Amy Bamber MT Department of Agriculture Ag/Livestock Bldg. Capitol Station Helena, MT 59620-0205 406-444-3676 email: abamber@mt.gov

Mr. Evan Hammer NRIS, MT State Library P.O. Box 201800 Helena, MT 59620 406-444-5355 email: ehammer@mt.gov

Mr. Russell Levens Department of Natural Resources and Conservation 1424 9th Avenue Helena, MT 59620 406-444-6687 email: rlevens@mt.gov

Mr. Eric Regensburger Department of Environmental Quality Box 200901 Helena, MT 59620-0901 406-444-0906 email: jistimson@mt.gov

#### EX OFFICIO MEMBERS

Mr. Joe Kolman Environmental Policy Office P.O. Box 201704 Helena, MT 59620-1704 406-444-9280 email: jkolman@mt.gov

Mr. James Halvorson Oil & Gas Conservation Divison 2535 St. Johns Avenue Billings, MT 59102 406-656-0040 email: jhalvorson@mt.gov

Mr. John Metesh Montana Bureau of Mines and Geology Butte, MT 59701 406-496-4159 email: <u>imetesh@mtech.edu</u>

Dr. Stephen Custer Earth Science Department Montana State University Bozeman, MT 59715 406-994-6906 email: <a href="mailto:uessc@montana.edu">uessc@montana.edu</a>

Ms Myra Shults Montana Association of Counties appointee P.O. Box 306 Missoula Montana 59806 406-549-7224 email: AMOCSJD@aol.com

Mr. Jeff Baumberger U.S. Bureau of Reclamation P.O. Box 30137 Billings, MT 59107-0137 email: jbaumberger@gp.usbr.gov

Mr. Peter Bierbach Bureau of Land Management P.O. Box 36800 Billings, MT 59107-6800 896-5033 email: peter\_bierbach@mt.blm.gov

Mr. John Kilpatrick U.S. Geological Survey 3162 Bozeman Avenue Helena, MT 59620 457-5900 email: jmkilpat@usgs.gov

Mr. Robert Wintergerst USDA Forest Service Region 1 RO Box 7669 Missoula, MT 59801 329-3036 email: <a href="mailto:rwintergerst@fs.fed.us">rwintergerst@fs.fed.us</a> Mr. John Larson EPA Montana Operations Office 10 W. 15<sup>th</sup> St Helena, MT 59626 406-457-5023 email: <u>larson.john@epamail.epa.gov</u>

Mr. Walt Sales Governor's appointee – Agricultural Water Users 3900 Stagecoach Trail Manhattan, MT 59741 406-282-7435 email: <a href="mailto:salesranch@theglobal.net">salesranch@theglobal.net</a>

Mr. Tad Dale Governor's appointee – Industrial Water Users 600 Shields Ave Butte, MT 59701 406-496-3210 email: tdale@montanaresources.com

Ms Jane Holzer Governor's appointee – Conservation Organization P.O. Box 909 Conrad, MT 59730 406-278-3071 email: msca@3rivers.net

Mr. Scott Cooney Governor's appointee – Development Representative P.O. Box 7694 Missoula MT 59807 406-239-5500 email: <a href="mailto:scottcooney@rockyrail.com">scottcooney@rockyrail.com</a>

#### VACANCY

There is currently no appointee to the committee from an organization of Montana cities and towns.

#### ALTERNATES

From time to time committee members may formally designate alternates to attend meetings in their absence. At this time with a newly reconstituted committee membership, there are no designated alternates.

#### **STAFF**

Mr. Marvin Miller Montana Bureau of Mines and Geology Butte, MT 59701 496-4155 email: mmiller@mtech.edu

Mr. Thomas Patton Montana Bureau of Mines and Geology Butte, MT 59701 496-4153 email: tpatton@mtech.edu

Mr. John Wheaton Montana Bureau of Mines and Geology Butte, MT 59701 406-496-4848 email: jwheaton@mtech.edu

### **Montana Code Annotated 2009**

Previous Section MCA Contents Part Contents Search Help Next Section

- 85-2-525. Ground water investigation program -- advisory committee. (1) The Montana bureau of mines and geology shall develop and implement a ground water investigation program for the purpose of collecting and compiling ground water and aquifer data. The program shall gather data, compile existing information, conduct field studies, and prepare a detailed hydrogeologic assessment report for each subbasin. The program shall develop a monitoring plan and a hydrogeologic model for each subbasin for which a report is prepared.
- (2) The ground water assessment steering committee, established by 2-15-1523, shall prioritize subbasins for investigation based upon current and anticipated growth of agriculture, industry, housing, and commercial activity. Permit applications for the development of surface water or ground water and the timing of adjudication of water rights may be taken into account in prioritizing subbasins.

History: En. Sec. 1, Ch. 436, L. 2009.

Provided by Montana Legislative Services

## Ground Water Assessment Steering Committee <u>Meeting Minutes</u>

DATE: May 4, 2010 LOCATION: Helena

ATTENDEES: Eric Regensburger (DEQ), Amy Bamber (DOA), Russ Levens (DNRC), Evan Hammer (NRIS), John Wheaton (MBMG), John Metesh (MBMG), Ed Deal (MBMG)

This meeting of the voting members of the steering committee was requested by MBMG to discuss the ramifications of the State University system Board of Regents decision on April 30, 2010 to cut the Ground Water Investigation Program (GWIP) budget by \$500,000 (out of a total budget of 4.2 million). Budget cuts in state agencies were required by the Governors office. With the field season in full swing MBMG believed that a meeting to discuss the budget cuts was needed quickly before the next regularly scheduled meeting of the committee.

The steering committee provided MBMG with suggestions on how to best implement the budget cuts with regards to the seven GWIP studies currently in progress. Three plans were discussed: 1) reduce funding for all seven studies by the same percentage; 2) remove all funding from one of the studies; and 3) reduce work on 2 of the studies (Florence and Flathead). The committee members agreed that the quality of the finished studies should not be compromised by the budget cuts. The committee focused on the Florence and Flathead studies because these were the last two studies in the rankings, both studies have not progressed as far into the budget as the other five sites, and both areas have significant amounts of existing data from previous studies. The committee suggested that if the budgets for those two study areas could be reduced and still result in a high-quality final report that would be the preferred course of action. MBMG discussed that reduction in the drilling program and/or reduction in the area of the studies could possibly be used to achieve the budget cuts. However, if after a more detailed analysis of those budgets MBMG does not feel they can produce quality reports for both study areas, that the lower scoring site (Flathead) would be abandoned for this biennium. A summary report of the work conducted in the Flathead would be completed, and the GWIP program would then focus on the remaining six study areas.

The group discussed the schedule for ranking the next seven study areas for the next biennium. The amount of GWIP funding that will be available for the next biennium is unsure. Picking the next set of study areas before the 2011 legislative session will allow more time for proponents of the studies to emphasize the need for the studies to the legislature. The group discussed using the existing ranking system with any improvements that the steering committee agrees upon at the June 16, 2010 steering committee meeting and updating the 2009 scores to reflect current conditions. To that end the scoring table and descriptions of each scoring category are attached for all members (voting and non-voting) of the committee to review and then discuss at the June 2010 meeting. After the June meeting, the steering committee will also solicit comments from the general public regarding any new study areas and for information on the existing study areas for the committee to consider. Hopefully, final selection of the next set of study areas can occur at the fall steering committee meeting.

# AGENDA FOR THE JUNE 16, 2010 MEETING GROUND WATER ASSESSMENT STEERING COMMITTEE

9:00 a.m. to 9:15 a.m.

Welcome, and review of minutes for the October 2, 2009 regular meeting minutes and the May 5, 2010 special voting members GWIP meeting.

9:15 a.m. to 10:30 a.m.

#### Ground Water Investigations program (GWIP)

- Update on staffing, funding, and project progress.
- 2010-2011 General fund cuts.
- Future funding issues.
- Project ranking procedures.

10:30 a.m. to 10:45 a.m.

Break

10:45 a.m. to 12:00 p.m.

Project information exchange

12:00 p.m. to 1:15:p.m.

Lunch break

1:15 p.m. to 2:30 p.m.

#### Ground Water Assessment Program (GWAP)

- Monitoring, Information Center, and Characterization Program fiscal year 2010 activity.
- Fiscal Year 2010 expenditure report.
- Fiscal Year 2011 activity plan.
- Fiscal Year 2011 budget.

2:30 p.m. to 3:00 p.m.

Identify action items - next meeting date - adjourn

#### **GROUND WATER ASSESSMENT STEERING COMMITTEE**

#### **STATE OF MONTANA**

July 1, 2010

To Whom It May Concern:

The Ground-Water Steering Committee is currently accepting nominations for Ground-Water Investigation Program (GWIP) projects to be conducted during the 2011-2013 biennium. Projects may be nominated by any individual or group, but we do ask that you coordinate your nominations through local water-resources groups such as the Montana Association of Counties (MACo) or Montana Association of Conservation Districts (MACD) to avoid duplication of effort. More information about the programs, previously nominated sites, and updates on the active sites are available at the GWIP web site: http://www.mbmg.mtech.edu/gwip/gwip.asp.

The Montana Ground-Water Investigations Program (GWIP) was established and funded by the 2007/2008 Legislative Water Policy Interim Committee (WPIC). Projects are prioritized by the Ground-Water Steering Committee and the program is operated by the Montana Bureau of Mines and Geology. The Program investigates site-specific water-resource issues throughout Montana that include:

- stream depletion from groundwater development by subdivisions or changes in irrigation practices,
- cumulative effects of existing and proposed water development on stream flow,
- impacts to groundwater and surface water from changes in irrigation practices or land use,
- implementation of aquifer storage and recovery (ASR) in Montana, and
- evaluating the success of mitigation/offset plans in closed basins.

Each investigation is expected to take between 1 and 3 years to complete, depending on the complexity. The results of each will include:

- A detailed report that describes the hydrogeologic system,
- Models that simulate hydrogeologic features and processes, and
- A comprehensive set of hydrogeologic data available through the MBMG Ground-Water Information Center (GWIC)

Attached is a list of the criteria that will be considered during the ranking process. You may fill out this criteria form and attach additional sheets as needed, or use a different format of your choosing. If using your own format, include all information indicated on the criteria form and please address each criteria in the order listed. Also attached is the current list of investigation sites considered for the 2009-2011 biennium and their current rankings. Comments may be submitted on a new investigation area not currently on the list or on an existing inactive project on the list. Clear and concise responses will benefit your proposal. Contact information must be included in the submittal for the person or group

submitting the nomination. Nominations must be received by the end of business, August 13, 2010. Submit your nomination either by US Postal Service or electronically through email to:

John Wheaton
Montana Bureau of Mines and Geology
1300 West Park St
Butte, MT 59701
Jwheaton@mtech.edu

The Ground Water Steering Committee will review comments received and update site rankings at the next Committee meeting on September 1, 2010 in Helena (location to be determined).

For additional information, please visit the web site or contact: Eric Regensburger, 406-444-0916 ERegensburger@mt.gov or John Wheaton, 406-496-4848, jwheaton@mtech.edu.

Eric Regensburger Chair Ground Water Assessment Steering Committee

#### Prioritization criteria and nominating form for GWIP project areas

The following list is used to rank nominated project areas under the Ground Water Investigation program. The criteria name is highlighted to show which column heading is used in the ranking matrix. Please address all points. Possible sources of information are suggested, but other sources are likely available for most criteria. Each criterion is assigned a ranking value by the Ground-Water Steering Committee.

Project title:	
Watershed:	
	p or individual:
Contact name:	
Address:	
Phone:	
Email:	
County:	
Problem Descript	ion: Attach additional pages as necessary.
Overview of the r	nagnitude of the problem: Attach additional pages as necessary.
a	ivision growth rate  Actual number of new lots permitted during the previous 5 years  Data source: DEQ
	Wells  Actual numbers of wells recorded in GWIC during the previous 5 years  Data source: MBMG-GWIC
a	nated Closed Basin  Is the project area within a Closed Surface Water Basin or a Controlled Ground Water Area Yes, No  Data source: DNRC
a	to <u>Sprinkler</u> conversion  Number of acres that changed during the previous 5 years  Data source: Dept of Ag or NRCS
5. Impai a. b	
6. Expai a. b.	

7.	-	sion of Agricultural water use
		Number of new industrial and municipal wells during the previous 5 years  Dept of Ag, DNRC Water Rights wells and surface withdrawal permits, MBMG-GWIC wells
8.	•	ation density  Total number of poorle impacted
	a. h	Total number of people impacted  Data source: NRIS
	0.	Dua source. Tales
9.		· Class or usability
		Water-quality classification or description
	b.	Data source DEQ and MBMG
10.	Inforn	nation already known
	a.	9 3 48 48 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4 4
		data may indicate the need to gather data before an investigation can begin. List
	h	previous studies on an additional sheet. DEQ, DNRC, MBMG
	υ.	DEQ, DIVICE, MIDWIG
11.	System	1 Complexity
	a.	Is the hydrogeologic system simple and straightforward or is the project scientifically
		complex? Provide information if possible. The Steering Committee will address this
	h	criterion. DEQ, DNRC, MBMG
	0.	DEQ, DIARC, MIDING
12.	County	Growth Plan in place
	a.	Does the County have a formal growth plan and is this a high density area Yes,
	h	No
	υ.	Data source: County
13.	Conte	ntious/ litigious
		Is the issue locally sensitive, potentially headed for court? Yes, No
	b.	Local input, Conservation District, NRCS
14.	Highly	valued Ecological water system
	a.	Is the surface water body a commissioned stream? Are Murphy rights involved?
		Provide information if possible. The Steering Committee will address this criteria.
	b.	DNRC, MT FWP
15.	Basin f	ill or bedrock <u>Aquifer Systems</u> or both
10.	a.	Similar to the complexity issue, but allows more direct inclusion of geologic controls.
		Provide information if possible. The Steering Committee will address this criteria.
		MBMG, DNRC
16.		ncy of effort
	a.	Adjacent project areas can allow for more efficient investigations. Provide information if possible. The Steering Committee will address this criteria.
	b.	Data source Map, DEQ, DNRC, MBMG

17.	a.	ity of hydrogeology and issues  Similar to complexity criteria but emphasizes the need to investigate a wide range of issues. Provide information if possible. The Steering Committee will address this criterion.
	b.	Data source DEQ, DNRC, MBMG
18.		olled groundwater A <u>rea</u>
		Is the project area within a Controlled Ground Water Area? Yes, No
	о.	Data source DNRC
19.	Availal	bility of Matching Funds
	a.	Priority for other funding sources
		i. Are matching funds available Yes, No
		If yes, attach a letter of commitment and indicate the source and amount.
		ii. Have matching funds been requested but not committed? Such as a grant
		application that has not been approved Yes, No
		Indicate the source and amount requested.
		The state of the s

b. Data source Local input

# MINUTES MONTANA GROUND-WATER ASSESSMENT STEERING COMMITTEE MEETING GROUNDWATER ASSESSMENT/INVESTIGATIONS PROGRAMS OCTOBER 2, 2009

#### Attendance:

Amy Bamber Montana Department of Agriculture

Evan Hammer Montana Natural Resources Information System
Russell Levens Montana Department of Natural Resources
Eric Regensburger Montana Department of Environmental Quality

Scott Cooney Properties/Montana Improvement Co.

Steve Custer Montana State University
Tad Dale Montana Resources

Tera Ryan Montana Salinity Control Association

Walt Sales Montana Aggies

Andy Brummond Montana Department of Fish Wildlife and Parks
Jake Kandelin Montana Department of Environmental Quality

Alan English Gallatin Valley Local Water Quality District
Jon Harvala Missoula County Local Water Quality District

James Swierc Lewis and Clark County Water Quality Protection District

Gerald Mueller Clark Fork Task Force Randy Overton RLK Hydro, Kalispell

Mary Price Northern Plains Resource Council

Taylor Greenup Lolo National Forest

Bob Wintergerst U.S. Forest Service, Northern Regional Office

Julie Ahern Montana Bureau of Mines and Geology
Luke Buckley Montana Bureau of Mines and Geology
John LaFave Montana Bureau of Mines and Geology
Tom Patton Montana Bureau of Mines and Geology
Kirk Waren Montana Bureau of Mines and Geology
John Wheaton Montana Bureau of Mines and Geology

Amy Bamber called the meeting to order and welcomed everyone. She then introduced the new Governor's appointees who are:

- Mr. Walt Sales agricultural water users
- Mr. Tad Dale industrial water users
- Ms. Jane Holzer conservation organizations (Tera Ryan attended for Ms. Holzer)
- Mr. Scott Cooney the development community

Amy then asked everyone else to introduce themselves and who they represented.

Following the introductions, Amy asked for approval of the Ground Water Investigations Preogram (GWIP) and Ground Water Assessment Program (GWAP) minutes from the June 17, 2009 meeting. The minutes were previously distributed via email. The committee approved the June 17, 2009 GWIP minutes. Corrections to the GWAP minutes clarified Gerry Daumiller's comments about NRIS activities. The committee approved the corrected minutes.

John Wheaton presented an update on GWIP. There are 11 approved study sites; seven studies will be active this biennium and five of the seven are already started with current staffing. GWIP has hired seven staff members (five members from within MBMG / two members are new to the agency) and the search for additional staff continues. Of the seven FTE currently working for GWIP, 3.5 are dedicated to groundwater modeling.

John pointed out that fact sheets and flyers about GWIP projects are available here and that web pages also are up and running that contain GWIP fact sheets and ranking matrices. Work plans include talking with local people about water issues, data gathering, data evaluation, and constructing groundwater models. The program will have an active drilling component to gather issue-specific data; hopefully well construction can be started soon. Currently GWIP's biennial budget is \$4.2 million but there are questions about the long term. GWIP presented its progress at the September 21, 2009 Water Policy Interim Committee (WPIC) meeting. John Wheaton also introduced Julie Ahern and Kirk Waren who are GWIP modelers

Following John Wheaton's presentation, Amy Bamber opened discussion by asking whether there were separate budgets for each project/study. John stated that there was one main budget with segments that could be marked as being used by a project. Amy wondered if there would be any extra funding to be directed towards projects 8, 9, 10, or 11. John stated the program's biennial course is set but if there are funds available, GWIP could potentially drill long-term monitoring wells at "pinch points" at the lower ends of selected western Montana basins.

Amy Bamber reminded everyone that relative to GWIP, the Steering Committee has no legislatively mandated task beyond selecting/prioritizing study areas.

Steve Custer asked about the interface between GWIP and GWAP, noting that potential for linkage exists. How does MBMG see it working? Tom Patton responded that the programs were closely aligned with respect to data management and long-term monitoring. All GWIP data will go to GWIC and the programs will share support of the newly hired GWIC laboratory manager. Long-term monitoring for GWIP projects is required by statute and that requirement correlates well with long-term monitoring conducted by GWAP. John LaFave is GWAP's long-term monitoring network sub-program leader and he is partially supported by GWIP. Tom also mentioned that within MBMG we have yet to work out some issues such as who answers the non-program related "daily phone call about water issues". John Wheaton said that he and Tom will work together on integration issues. Because GWAP is working in Gallatin County, GWIP studies in the Gallatin Valley are places where GWAP and GWIP will coordinate. Tom Patton suggested that because there already is a lot of data for the Gallatin Valley and the GWIP study will provide yet more,

GWAP will likely increase its focus on outlying areas in Gallatin County and on Madison County where relatively few data exist.

John Wheaton asked, "How will Steering Committee meetings be requested when needed?" Amy Bamber suggested that GWIP is so new that no one really knows. We need to insure that a good start is underway and that project sites are picked and ranked. There will also be a new Steering Committee chair after this meeting. Tom Patton said that the committee will likely meet for GWAP purposes on its regular schedule with a budget meeting in June and a work/progress meeting in October. GWIP may need Steering Committee meetings at other times but can certainly discuss issues at any GWAP meeting. Amy Bamber emphasized that committee members feel free to speak up at any time he/she might have questions.

Amy Bamber opened the meeting up for Project Information Exchange, reminding attendees of the opportunity to present synopses of groundwater projects within their groups or agencies.

James Swierc (LCWOPD) reported that the district was conducting its semi-annual sampling in the Helena Valley to better quantify septic system impacts on groundwater. Eric Regensberger (DEQ) stated that they were accepting public comment on the River Rock WWTS and collecting data from on-site Level II systems. So far, three of four of the monitored systems are showing good nitrogen removal capability. Steve Custer (MSU) said that he was hoping to continue to cooperate with GWAP/GWIP. Tera Ryan (MSCA) reported that they are cooperating with Jon Reiten at MBMG on a research study in the Hailstone Basin. Gerald Mueller (CFTF) said that the task force had no specific groundwater activity but keeps an eye on groups that do. There are others doing groundwater modeling in the Flathead and he would be interested in brokering meetings to bring these groups and GWIP together. Jake Kandelin (DEQ) reported that they are working on a backlog of groundwater sources or groundwater sources under the influence of surface water and looking forward to implementation of EPA rules in December 2009. Russell Levens (DNRC) said that they are working on water rights staff training and discussing site issues with GWIP. Kirk Waren (MBMG) is working on the North Hills and Scratchgravel Hills GWIP projects. Bob Wintergerst (USFS) said that the Forest Service and MBMG are working together to develop an inventory process for groundwater resources on federal lands. Andy Brummond (FWP) talked about critical area assessments. Mary Price (NPRC) said that her organization was concerned about CBM development and also protection of senior water rights holders. Jon Harvala (MCWQD) reported that the Missoula district was collecting VOC samples from Missoula Valley monitoring wells. Alan English (GLWQD) said that the Gallatin Valley District was completing pharmaceutical sampling and also collecting VOC samples. They are cooperating with GWAP to provide monthly measurements on wells in the Gallatin Valley. Alan's staff has retrieved water-level probes from monitoring wells and will download them and prepare data for GWIC. Walt Sales (AGAI) told the committee that he has connections to the agricultural community and is concerned with issues of water supply and quantity. Luke Buckley (MBMG) briefly introduced GWIC and MBMG data management. Amy Bamber (DOA) described Agriculture's groundwater vulnerability study in the Judith River Basin. There is lots of dryland agriculture on near-surface sand and gravel aquifers. So far, there has been a high number of pesticide hits. Christian Smith from Agriculture will give a paper at the National AWRA meeting.

After all attendees had commented, Amy Bamber asked Tom Patton to update the committee on activities within GWAP.

Tom directed the committee's attention to the GWAP activity plan and pointed out that 'diamond' bulleted tasks were defined at last June's meeting, and that circular bullets are progress notes towards each goal. Tom mentioned that under the Ground Water Assessment report heading, staff had made seven presentations to groups including the Bitterroot Water Forum and Montana AWRA Section meeting. GWAP has also participated in several GWIP search committees. The Ground Water Characterization Program lost Kirk Waren and Tom Michalek to GWIP and we are currently trying to replace these individuals. Several Characterization maps and reports are in various stages of preparation and review. About 500 visits have been made to 430 wells in the Gallatin-Madison study area and about 200 water-quality samples have been collected. These data are in GWIC and comprise a high-quality baseline data set for Gallatin and Madison counties. The Ground Water Monitoring Program is pretty much on schedule and continues to monitor 900+ wells quarterly. The program has surveyed about 60 network sites with the Leica GPS instrument purchased last spring. Montana is continuing to participate in the Sub Committee on Ground Water (SOGW) development of a National Ground Water Monitoring Network (NGWMN) and GWAP will submit a statement of interest in becoming a NGWMN pilot project. The Ground Water Information Center has successfully hired a GWIC laboratory manager to handle data entry and student workers. The laboratory manager will allow Luke Buckley more time to do systems development. Luke is taking training in building ".NET" framework web applications which is necessary for the next major re-design of the GWIC web interface.

Tom Patton reported that the new Natural Resources Building at Montana Tech will be completed this winter and that the MBMG will move to the new facility. Staff is already preparing for the event but there will be an upcoming time period dedicated to sorting, throwing away, and moving.

After Tom completed the program review, Alan English asked about the survey grade GPS and which wells are being located. Tom Patton answered that we intend to survey all the statewide monitoring points during the next year. We are also planning to survey the monthly monitoring sites within the Gallatin-Madison study area. Alan is interested in potential cooperation on surveying some of the Gallatin Valley sites.

Tom Patton presented GWAP budget reports for fiscal years 2009 and 2010. The Steering Committee does have budget oversight for GWAP. The current reporting level is what has evolved over the program's history and is what the committee has deemed appropriate. The reporting level can be adjusted as the committee desires. Tom told the committee that it receives the final fiscal year 2009 report at the October meeting because at the time of the June meeting not all transactions have posted. The large equipment expenditure in June 2009 mostly covers the purchase of the survey grade Leica GPS system. The committee had no questions.

Tom Patton then presented a budget report for fiscal year 2010. Data are complete for July and August but September 2009 benefits are not included. The loss of Kirk Waren and Tom Michalek

to GWIP is reflected in the personnel graph and the program is currently trying to fill these positions. Steve Custer commented that it takes time to hire and wondered what might happen to the unused dollars. Tom suggested that the funds could be used for additional water-quality samples or for equipment replacement. Amy Bamber asked about staff at the end of fiscal year 2009. Tom replied that we still had Kirk Waren and Tom Michalek at that time. Alan English noted that \$5,000 for equipment seems low. Tom replied that although classified as "equipment" in the program's budget, the funds were mostly for probe and meter replacements which generally cost less than the \$5,000 "supplies versus equipment" threshold in the state's accounting system. Scott Cooney asked if the budget was a two year budget. Tom replied that the budget was set by the legislature at \$841,886 for each year of the biennium. Scott Cooney suggested that the program seemed underfunded for its importance. Tom Patton provided a short history of GWAP funding ending with the current funding level of \$300,000 annually from RIT interest, \$366,000 annually in RIGWAT proceeds, and \$175,886 from the Natural Resources Operations Account. The first two amounts are locked down in statute and cannot change unless the Ground Water Assessment Act is modified. The funding from the Operations Account is defined in House Bill 2 each legislative session. All of the funds are appropriated in House Bill 2 each legislative session. Scott asked about getting funding increased? He suggested that we have 1.5 years to work on that issue. Tom Patton agreed that there is about 1.5 years before the next session and would be happy to work with anyone to increase the funding. A current problem is that GWAP does not get additional support for pay plans, or "present law" adjustments. When the legislature approves a pay plan, GWAP employees get the same raises as anyone else, but there are no additional funds to cover the increased cost. GWAP also appears to not be considered in "present law" adjustment calculations during the state's budget process. Tad Dale asked if GWAP was attached to the Montana Tech budget. Tom replied that administratively yes, but that GWAP is a line item in House Bill 2 within the MBMG agency budget and separate from the University Systems "lump sum". Eric Regensberger asked, "Who has to ask for more funding?" Tom Patton replied that MBMG/GWAP participates in the University System budget process. Additionally, we have presented the "inflation" issue to the Governor's Budget Office and taken opportunities such as those presented by working with the legislature's Interim Committee on the Resource Indemnity Trust funds a couple of sessions ago. Interaction with that interim committee resulted in GWAP being included in distributions from the Natural Resources Operations Account. Tom added that GWAP has two budget masters, the Steering Committee and the University System: that to date have not been in conflict.

Amy Bamber reviewed the committee's October 12, 2007 decision about chair terms and succession. She is at the end of her 2-year term and per the policy the chair will move to the Department of Environmental Quality and Eric Regensberger for the next two years.

The committee set the date of the next meeting to be June 16, 2010 at Montana Tech in Butte, Montana.

#### Prioritizing Project Areas for GWIP (As used June, 2009)

Identification of problems/issues within a proposed project area:

- <u>Subdivision</u> growth rate (Data source: DEQ, actual number of new lots permitted per timeframe; then rank against the other projects in the matrix on a scale of 1-5)
- New wells (Data source: MBMG, actual numbers of wells recorded in GWIC per same timeframe; then rank against the other projects on a scale from 1-5)
- Designated Closed Basin (Data source: DNRC, yes (5) or no (1))
- Flood to <u>sprinkler</u> conversion (Data source: Dept of Ag or NRCS, acres change; rank 1 to 5)
- Impaired water quality (Data source: DEQ, yes (5) or no (1))
- Expansion of <u>industrial</u> water use (Source? Industrial and municipal wells in GWIC or local input; rank 1 to 5)
- Expansion of <u>agricultural</u> water use (Data sources: Dept of Ag, DNRC Water Rights and MBMG, wells and surface withdrawal permits; rank 1 to 5)

After identifying the number of issues within a proposed project area, further characterize the area taking into account:

- Population density (Data source: NRIS, total people impacted, rank 1 to 5)
- Water class or usability (Data source DEQ and MBMG: classification; value 1-5, higher for higher class)
- <u>Information</u> already known (may indicate the need to gather data before an investigation can begin; rated high for previously studied (3) low for no previous studies (1))
- System **complexity** (more complex (3) to less complex (1))
- County growth plan in place, with a high density area (Data source: County, yes (5) or no (1))
- Contentious/ litigious (local input, Conservation District, NRCS; yes (5) or no (1))
- Highly valued <u>ecological</u> water system (i.e. commissioned stream, Murphy rights; rank low (1) to high (5))
- Mitigation water availability (may not identify until after a study; yes (1) or no (3))
- Basin fill or bedrock <u>aquifer systems</u> or both (like complexity issue, basin=1, bedrock=2, both=3)
- <u>Efficiency</u> of effort (adjacent watersheds are more efficient investigations; value of 0 for no efficiency associated; 2 for adjacent and sequential areas; maximum rank of 3 for adjacent and parallel watersheds investigated at same time.)
- <u>Diversity</u> of hydrogeology and issues (again, like complexity, new and different issue is ranked high up to 3, repeated issues are ranked low to 1)
- Controlled groundwater area (Data source DNRC, yes (5) or no (1))
- Priority for other funding sources (if the project could be used to attract additional funds as **match** a score up to 3 could be assigned and if not a 0)

$$Y = 5, N = 1$$
  
 $H = 5, M = 3, L = 1$ 

25-Sep GWIP Watershed prio		on matr	ix				-	-		-				<del>.</del>														
Transferred price	OTT. EG.		'' Issues									Charact	teristics															
											•••																SCORE	
Map Number	Name	RANKING	Subdivision	New wells	Closed Basin		Sprinkler	Water quality	<u>Industrial</u>	Agricultural	ISSUESS SCORE	Population	Water class	Information	Complexity	4		Contentions	Ecological	Mitigation nised		Efficiency		Diversity	Controlled area	Match	MAGNITUDE SC	TOTAL SCORE
			rank 1- 5	rank 1- 5	5=Yes 1=No	rank 5	1- 5=Y 1=N		ık 1- га 5				rank 1- 5	rank 1- 3	rank 1- 3	5=Yes	5=Yes			es =2		arrellel	Comples	ex=3 5=Y =1 1=N		atch=3 no=0		
ACTIVE PROJECTS																												1
12 North Hills		1	4			5	2	5	1	2	23	5	_			3	-	5	1	3	3	3		3,	5	3	41	64
18 Four Corners		2	4			5 5	5	5	1	3	27	5 5						5	1	3 3	1	3		3	1	3	33	60
17 Belgrade		3	4			5	5	5 1	1	3 5	27 20	1		-			-	5	1 5	3	3	3		3	1	3	32 37	59 57
35 Lower BH River West 13 Scratch Gravel Hills		5		_		5	2	5	1	1	22	5					-	5	1	3	3	3		3	1	3	35	57
6 Florence		. 6				5	5	1	1	4	24	3		_				5	5	3	3	3		2	1	0	33	57
2 Flathead Valley		7				1	3	1	1	4	18	5						5	5	3	3	3		2	1	0	37	55
INACTIVE PROJECTS																												
27 West Billings		8		4 3		1	4	5	1	2	20	4		3		3	5	5	1	3	1	0		2	1	3	34	54
7 Hamilton		9		3 4		5	5	1	1	3	22	3	3	3 1		2	1	5	5	3	3	3		2	1	0	32	54
Madison Valley Ennis to																												1
39 Three Forks		10	4	4 4	ı	5	4	5	1	4	27	2	- 2	2 2		1	5	1	1	3	1	0		3	5	0	26	53
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38 to Ennis Lake		12	4	4 4		5	4	1	1	4	23	2		3 2			5	1	5	3	1	0		1	5	0	29	52
33 Coalbed Methane		13	:			1	1	5	5	2	17	1		-		-	_	5	1	3	2	. 0		3	5	3	32	49
15 Three Forks		14	4			5	4	5	1	3	26	4		-		_	_	1	1	3	1	3		1	1	0	22	48
11 Greenfield Bench		15				5	5	1	1	5	21	1				=	-	1	1	3	2	3		3	1	3	27	48
20 West Yellowstone		16	2			5	1	1	1	2	15	4	-	-			-	1	5	3	3	0		1	5	3	32	47
36 Big Sky		17		-		5	1	5	1	1	19	4					-	5	1	3	3	0		3	1	0	28	47
37 Boulder River		18	3			5	3	5	1	3	21	1	. 3			_		3	3	3	1	0		2	1	0	26	47
28 East Billings		19	3			1	5	5	1	2	19	4		_		2	-	1	1	3	1	0		2	1	0	25	44
34 NF Flathead		20				1 5	1	2	1	2 1	14	2	. 3				•	1	5 1	3	3	0		2	5 1	0	28 21	42 39
9 Summit Valley		21 22	3			5		5	1	5	18 21	1		-			-	1	1	3	1	0		1	1	0	16	37
10 Priest Butte Lake		23				5	Δ.	1	1	3	18	3		-		_	-	1	1	3	1	0		1	1	0	18	36
14 Townsend, Toston 32 Sidney		24				1	1	1	1	5	15	2					-	1	1	3	1	0		1	1	3	21	36
5. Missoula Valley		25	-			1	1	1	1	1	11	5				_	-	1	1	3	1	0		2	1	0	23	34
23 Stillwater Valley		26				1	3	1	1	3	14	1					1	1	1	3	3	0		2	1	0	20	34
8 Georgetown Lake		27				5	1	1	1	1	14	2		-				1	1	3	3	0		1.	1	0	19	33
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3 Smith Valley		30				1	2	1	1	3	14	2		-				1	1	3	1	0		1	1	0	17	31
19 Pine Creek		31				1	2	1	1	2	12	2		-			-	1	1	3	3	0		1	1	0	19	31
26 Park City		32				1	1	1	1	1	10	3					-	1	1	3	3	0		1	1	0	20	30
4 Noxon		33	3			1	2	1	1	2	11	1		-			_	1	1	3	3	ō		1	1	ō	17	28
24 Rock Creek		34				1	1	1	1	1	9	1		3 1		2	1	1	1	3	3	0		1	1	0	18	27
29 Roundup		35		1 1		1	1	1	1	3	9	1		1			1	1	1	3	3	0		1	1	0	18	27
21 Belt, Monarch		36				1	1	1	1	1	8	1		_				1	1.	3	3	0		1	1	0	18	26
31 Clear Lake		37				1	1	1	1	2	8	1					-	1	1	3	3	0		1	1	0	18	26
25 Pryor Mountains		38				1	1	1	1	1	7	1		_			_	1	1	3	3	0		1	1	0	18	25
22 Little Belt Mountains		39				1	1	1	1	1	7	1		-		2	1	1	1	3	2	0		1	1	0	17	24
22 Little Belt Mountains		39		1 1		1	1	1	1	1	7	1		, 1		Z	1	1	1	3.	2	0		1	1	D D	17	24

# MINUTES MONTANA GROUND-WATER ASSESSMENT STEERING COMMITTEE MEETING GROUNDWATER INVESTIGATIONS PROGRAM JUNE 17, 2009

#### Attendance:

Amy Bamber Montana Department of Agriculture

Joe Meek

Montana Department of Environmental Quality
Eric Regensburger

Montana Department of Environmental Quality
Russell Levens

Montana Department of Natural Resources

Montana Natural Resources Information System

Montana Department of Fish Wildlife and Parks

Joe Kolman

Environmental Policy Office- Montana Legislature

Alan English Gallatin Valley Local Water Quality District

James Swierc Lewis and Clark County Water Quality Protection District

Jon Harvala Missoula County Local Water Quality District

Myra Shults Montana Association of Counties
Tom Harrington Jefferson County Extension Affiliate

Bob Sims Jefferson County

Katie Tackett Beaverhead Watershed Committee
Jim Forseth U.S. Bureau of Reclamation

John Larson U.S. Environmental Protection Agency

Kyle Blasch U.S. Geological Survey

Ginette Abdo

Julie Ahern

Montana Bureau of Mines and Geology

Ed Deal

Montana Bureau of Mines and Geology

Montana Bureau of Mines and Geology

John LaFave

Montana Bureau of Mines and Geology

John Metesh

Montana Bureau of Mines and Geology

Tom Patton

Montana Bureau of Mines and Geology

Montana Bureau of Mines and Geology

John Wheaton

Montana Bureau of Mines and Geology

Montana Bureau of Mines and Geology

Amy Bamber opened the meeting and welcomed those attending. At this meeting the Steering Committee will discuss the new Groundwater Investigations Program (GWIP), review project prioritization criteria, and prioritize the first GWIP projects. Amy asked everyone to introduce themselves. After the introductions, Amy asked John Metesh (MBMG) to introduce the Bureau and GWIP. John Metesh told the committee that the Bureau is a non-regulatory, applied research agency within the University System. The Bureau's organizational structure is relatively flat; the new program will be within the Research Division along with most other Bureau programs including the Groundwater Assessment Program (GWAP). GWIP and GWAP are separate programs but there will be areas of overlap in long-term monitoring and data management. GWIP resulted from actions of the 2007 Legislature's Water Policy Interim Committee (WPIC). WPIC introduced HB52 which will become law on July 1, 2009. John reviewed HB52's Legislative history and amendments as the bill moved through the Legislative process. The end result was that GWIP is funded at \$4.2 million per biennium—roughly based on \$600 thousand per each 1-3 year study, and that about 7 studies would be ongoing at any time. The focus is clearly on the seven closed basins but the statute allows projects to be selected statewide.

Amy Bamber directed the committee's attention to the minutes of the October, 3, 2008 regular, the October 24, 2008 GWIP Subcommittee, the December 3, 2008 special Steering Committee, and the May 27, 2009 GWIP subcommittee meetings. Copies of all the meeting minutes were sent via email for review prior to today's meeting. Amy asked for corrections and/or additions. The minutes were approved as presented.

Amy referred those attending to the GWIP subcommittee minutes of May 27, 2009 which include a report detailing proposed ranking criteria for GWIP project areas. The ranking criteria include identification of problems/issues within a proposed project area and further characterizing of the problems/issues by taking into account the factors listed in the subcommittee report. Amy asked the committee to discuss the ranking criteria and their development to insure that the full committee is comfortable with the proposed procedure.

#### Discussion points included:

- How growth and subdivision build-out was considered. Some members thought that some areas may be at maximum levels – other suggested that we don't understand the impact of past growth.
- Economic development growth trend analysis may be available at the University of Montana's O'Connor Center.
- How the current project list of about 30 sites was developed most project areas were suggested by agencies based on problems faced by their programs.
- How to solicit information for future/additional projects the Bureau should prepare a press release WPIC and others may help distribute.
- Differences between GWIP and GWAP GWIP is issue focused where GWAP is resource focused. Steering Committee responsibility to GWIP is prioritizing study areas GWIP/GWAP funding and personnel are separate but there is overlap in areas such as support of the Ground Water Information Center (GWIC).
- Legislative changes if any related to water development. No major new policies on line.
- Water rights enforcement and impacts of exempt wells.

Following the discussion, Amy Bamber asked John Wheaton to present the trial project ranking matrix developed at the request of the GWIP subcommittee. John said that MBMG had experimented with most of the ranking values, adjusting them to see if different projects would come out highest. The ten highest priority sites consistently scored high regardless of the criteria adjustments. The committee discussed many aspects of the trial ranking including:

• Nearby locations of some project areas – could be combined into one project to produce efficiencies. Combinations are possible; however, we do not want project topics to get too broad. Studies need to be able to answer a question(s) within short time frames – studies need to be geographically small and manageable.

- There was strong committee consensus that Montana would benefit from getting issuespecific monitoring started in selected areas. For example, establishment of monitoring at 'pinch points' in sub basins will provide background data for model calibration. Additional stream gauging may be appropriate at project scales.
- The use of groundwater flow models. Most studies will benefit from models but these tools are not the end products. Models will be created in conjunction with overall GWIP interpretative reports about resources and issues. Many studies will focus on surface water groundwater conjunctive use issues. There are differences between building and using models answering questions requires additional steps.
- Potential for various project rankings to change based on updated information from counties and others.
- How issues and characteristics were related to develop a rank. Points awarded for each
  criterion were added to get a total. Ecological value of water and other criteria values could
  use more input Fish Wildlife and Parks and others are willing to help.
- Impacts from growth including exempt wells on stream discharge.
- Potential cost share from federal agencies (Bureau of Reclamation) in areas where there are federal water interests.
- How were TMDL and sole source aquifers considered in the ranking criteria? TMDLs were
  not considered in detail Missoula Valley which is a study area, is the only sole source
  aquifer in Montana.
- Economic development impacts of GWIP studies. Committee members were warned that GWIP must keep away from regulatory perceptions. The program must be focused on doing good science and providing reliable data. However, regulatory agencies will use the data/tools to make decisions.
- The review process for the scientific data will there be peer review? There will be at least internal MBMG review of reports/data.

As the discussion continued, Tom Patton restated that the rankings were a trial matrix to evaluate the criteria and rank the potential study areas. Based on the discussion, there is room for improvement but the Bureau needs to get some projects on the ground as soon after July 1, 2009 as possible. GWIP projects need to get started so there is time to complete as many as possible this biennium. There will be time to refine the selection process for future projects as we go. Amy Bamber proposed that the committee agree on the top priority sites so that MBMG has something to get started on (i.e. the top 4 project areas, or so) and because they have remained at the top of the list despite changes in ranking criteria values, then re-rank remaining sites as any additional project areas come to light, and the criteria evolve. Amy suggested that the committee tentatively accept the top 10 projects to allow for some flexibility regarding project management decisions by the bureau. These projects beyond the first 3-4 can be reevaluated as necessary at the October steering committee meeting. Alan English and Russell Levens agreed.

The Steering Committee agreed that:

- It would accept the top ten ranked projects as priority on the preliminary ranking. These projects are: North Hills (Lewis and Clark County), Four Corners (Gallatin County), Belgrade (Gallatin County), Scratchgravel Hills (Lewis and Clark County), Lower Beaverhead River West (Beaverhead County), Flathead Valley (Flathead County), Florence (Ravalli County), Hamilton (Ravalli County), Manhattan (Gallatin Valley), and Three Forks (Gallatin, Madison, and Broadwater Counties).
- MBMG will start on 6-7 of the top 10 projects as they are able.
- MBMG will begin long-term monitoring in prioritized study areas as soon as possible so that adequate data to evaluate groundwater modeling results become available.
- MBMG will prepare a press release announcing GWIP and seek additional data to improve ranking criteria. As additional information becomes available, projects not underway by the fall Steering Committee meeting could be re-ranked.
- MBMG will look for points of consolidation, but combining projects depends on geographic location and similarity of issues.
- The Steering Committee will continue to work on GWIP ranking Criteria.

Joe Meek asked how many projects would be started. John Metesh said that by the numbers the Bureau would start on seven projects but now needed to develop work plans and budgets. At that point it would determine how many projects could actually begin. Ed Deal said that the Bureau wants to get people on the ground as soon as possible but won't be starting in seven areas. MBMG will have to build capacity and then maintain a steady level. The Bureau cannot staff up for a couple of years and then cut back.

Joe Meek pointed out that the Department of Environmental Quality (DEQ) moves a lot of money through a revolving fund and awards grants on a competitive basis. The DEQ granting process has so far survived lots of scrutiny. He suggested that the Steering Committee investigate how the DEQ process might apply in ranking future GWIP projects.

At 12:00 p.m. Amy Bamber suggested that the Steering Committee take a lunch break. When the committee reconvenes at 1:00 p.m. it will hear reports, budgets, and work plans for the Ground Water Assessment Program.

#### MINUTES MONTANA GROUND-WATER ASSESSMENT GWIP SUBCOMMITTEE MEETING – NOVEMBER 24, 2008

#### Attendance:

Amy Bamber Montana Department of Agriculture
Eric Regensburger Montana Department of Environmental Quality
Russell Levens Montana Department of Natural Resources
John Tubbs Montana Department of Natural Resources
Gerry Daumiller Natural Resources Information System
Jim Wilbur Lewis and Clark County Water Quality Protection District

John LaFaveMontana Bureau of Mines and GeologyJohn MeteshMontana Bureau of Mines and GeologyTom PattonMontana Bureau of Mines and Geology

Amy Bamber opened the meeting and described the intent of LC431 as an accelerated process to provide agencies with data necessary for informed permitting. Discussion among the committee members focused on providing an audience of agencies, developers (and their consultants), and counties with highly technical information including hydrogeologic model development. The program would focus on sub-basins in high-growth, heavily developed areas. Topics that may be addressed include surface and ground-water interaction, impacts of exempt wells, and water-quality issues. The goal of this meeting is to develop some criteria with which the Steering Committee might prioritize potential Ground-Water Investigation Program (GWIP) study areas should LC431 become law.

John Metesh provided a list of 31 potential GWIP study areas gathered from MBMG, DNRC, DEQ, and other agency offerings. John LaFave handed out a series of maps showing the locations of the potential areas. The maps showed the study area boundaries, 1990 population density, 2000 population density, 1990 water well locations, 2008 water well locations, water wells since 1990, and subdivision lots approved between fiscal years 1990 and 2008.

The subcommittee discussed the background information and then listed potential criteria that the Steering Committee could use to prioritize a list of GWIP projects. The subcommittee developed a preliminary two-tiered criteria study area selection. Amy suggested that the subcommittee select three potential GWIP study areas and attempt to rank them using the proposed structure. The exercise resulted in refinement of the proposed criteria and the preliminary system is described in the attached 2008-11-24 GWIP criteria subcommittee report. As the discussion concluded, John Tubbs suggested that Steering Committee voting members familiarize their agency directors about the potential for GWIP and its purpose. That way when cabinet-level discussions take place the directors have good information with which to make decisions.

Amy adjourned the meeting and the subcommittee will report to the special Steering Committee meeting to be held at the Department of Agriculture conference room on December 3, 2008.

Ground Water Assessment Program Steering Committee Ground Water Investigation Program (LC 431) Criteria Sub-Committee November 24, 2008 criteria development meeting notes Amy Bamber, MDA, November 28, 2008

The sub-committee believes that the intent of LC 431 is to provide a highly technical end product to be used by knowledgeable water professionals for the benefit of state agencies, counties, local units of government, and developers in water resource decision-making processes. LC 431 projects should be conducted on a smaller scale and at an accelerated pace compared to the current Ground Water Assessment Program.

The major identified questions asked of the investigation program involve water quantity, water quality, ground-surface water interaction, and the location of water. A hydrogeologic model developed by the program should help the state and counties better allocate measure and monitor water withdrawals.

The projects should provide information that is useful to a wide variety of interests such as adjudicators, agriculture, and the development community. Additionally, the projects should attempt to answer questions such as the effect of exempt wells in closed basins, and contribute to more informed permitting.

It was suggested that the legislation include a process and scope section, similar to the corresponding section of the assessment program statute.

A rough outline of two tiers of criteria for selection of project areas was developed:

#### Tier One:

- Subdivision approvals
- New wells within the past 20 years
- Closed basins
- Population density
- Usability
- Information known
- System complexity

#### Tier Two:

- Flood to sprinkler conversion
- Controlled gw area (or proposed)
- County growth plan with high density area
- Contentious, litigious
- Water quality (natural vs. human impacts)
- Industry
- Highly valued ecological water system (i.e. commissioned stream, Murphy rights)

#### Additional Considerations:

- Mitigation water availability
- Basin fill vs. bedrock

Ground Water Assessment Program Steering Committee Ground Water Investigation Program (LC 431) Criteria Sub-Committee November 24, 2008 criteria development meeting notes Amy Bamber, MDA, November 28, 2008

At our next full Steering Committee meeting, we will go through the criteria and receive feedback from the entire Steering Committee. All Steering Committee members should determine if they are comfortable with their role in the statute, and be prepared to educate their respective agencies/workplaces on the investigation program.